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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/735,369
Filing Date: December 12, 2003
Appellant(s): ACKERMAN ET AL.

Shawn K. Leppo
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed Nov. 30, 2005 appealing from the Office action mailed June 28, 2005.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,887,588	ACKERMAN ET AL	5-2005
2003/0059633	ACKERMAN ET AL	3-2003
6,677,064	SUBRAMANIAN	1-2004
5520516	TAYLOR ET AL	5-1996

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

1. **Claims 1, 2, 5-12 and 15-20 stand finally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 14-18 of U.S. Patent No. 6,887,588 (Ackerman et al).**

Although the conflicting claims are not identical, they are not patentably distinct from each other because 6,887,588 teaches all the features of these claims except that (1) of the listed inhibitor material, one of group 2 or 3 of the periodic table and one of group 5 of the periodic table are selected, (2) that the thermal barrier material is a

ceramic such as yttria stabilized zirconia and the substrate nickel base superalloy, and (3) that ratios of the inhibitor materials. However, as to the selection of the inhibitor materials, '588 provides that one or more of the listed materials can be selected, which would include selection of one of group 2 or 3 of the periodic table (from the listed materials) and one of group 5 of the periodic table (from the listed materials). As to the use of yttria stabilized zirconia as the thermal barrier material and nickel base superalloy as the substrate, it is the Examiner's position that it is well known in the art of thermal spraying and turbine use that the thermal barrier material should commonly be well known to be yttria stabilized zirconia and the substrate be a nickel base superalloy. As to the atomic ratio, the claims teach to select one or more from the listed inhibitor materials, and one of ordinary skill in the art would provide routine experimentation to optimize the amounts of each material to be used such that desirable inhibition is provided.

2. Claims 1-20 stand finally rejected under 35 U.S.C. 103(a) as being unpatentable over Ackerman et al (US 2003/0059633).

Claim 1, 12, 20: Ackerman teaches a method for preparing a protected article. *Figure 2 and paragraph [0001].* The article is provided. *Figures 2-3 and paragraph [0020].* A bond coat is deposited onto an exposed surface of the article. *Figures 2-3 and paragraph [0025].* A thermal barrier coating is provided on an exposed surface of the bond coat. *Figures 2-3 and paragraphs [0028] and [0032].* The thermal barrier coating provides

depositing a primary ceramic coating onto the bond coat. *Figures 2-3 and paragraph [0028].* A stabilization composition is deposited onto an exposed surface of the primary ceramic coating. *Figures 2-3 and paragraphs [0032]--[0034].* The stabilization composition can be made of two elements. *Paragraphs [0032]--[0034] (mixtures of the listed materials can be used).* According to Ackerman, the first element can be a material selected from lanathnum or neodymium, a material of Group 2 or 3 of the periodic table. *Paragraphs [0032] – [0034] (lanthanum, neodymium).* The second element can be selected from niobium or tantalum, a material of Group 5 of the periodic table. *Paragraphs [0032] – [0034] (niobium, tantalum).*

Claim 2, 12: the article can be a nickel base superalloy article. *Paragraph [0020].*

Claim 3: the article can be component in a gas turbine engine. *Paragraph [0020].*

Claim 4, 14: the bond coat can be a diffusion aluminide or an aluminum containing overlay bond coat. *Paragraph [0025].*

Claim 5, 12: the primary ceramic can be yttria stabilized zirconia. *Paragraph [0028].*

Claim 6, 15: the first element can be lanthanum or neodymium. *Paragraphs [0032] – [0034].*

Claim 7, 16: the second element can be tantalum or niobium. *Paragraphs [0032] – [0034].*

Claim 8, 17: the composition can be a grouping of lanthanum and tantalum, neodymium and tantalum, etc. *Paragraphs [0032] – [0034], as the mixtures can be used.*

Claim 9, 18: the first and second elements can be co-deposited. *Paragraph [0036] (when more than one element used, they are applied at the same time).*

Claim 10: the first and second elements can be co-deposited from a liquid solution. *Paragraph [0036] (when more than one element is used, they are applied at the same time)..*

Claim 13: the yttria stabilized zirconia can be 7 percent yttria by weight. *Paragraphs [0028] and [0042].*

Ackerman teaches all the features of these claims except the atomic ratio of the amount of the first element to the second element.

However, Ackerman does teach that mixtures of the materials can be used as long as the reaction products meet the other requirements set forth. *Paragraph [0034].*

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ackerman to perform routine experimentation to optimize the amount of each element to be used when using a mixture of materials, because Ackerman teaches that when mixtures are used, the other requirements set forth in the patent must be met, and thus one of ordinary skill in the art would optimize the mixtures to be sure that the required features of Ackerman are met. As a result, the provided atomic ratio of the two materials in optimized amounts would be within the claimed range.

3. Claims 1-12 and 14-20 stand finally rejected under 35 U.S.C. 103(a) as being unpatentable over Subramanian (US 6677064).

Claim 1, 12, 20: Subramanian teaches a method for preparing a protected article. *Column 1, lines 10-15.* The article is provided. *Figures 2-4 and column 3, line 65 through column 4, line 10.* A bond coat is deposited onto an exposed surface of the article. *Figures 2-4 and column 4, lines 10-40.* A thermal barrier coating is provided on an exposed surface of the bond coat. *Figures 2-4 and column 4, lines 35-60 and column 5, lines 40-68.* The thermal barrier coating provides depositing a primary ceramic coating onto the bond coat. *Figures 2-4 and column 4, lines 45-60 (yttria stabilized zirconia, for example).* A stabilization composition is deposited onto an exposed surface of the primary ceramic coating. *Figures 2-4 and column 5, lines 40-50 and 60-68.* The stabilization composition can be made using two elements. *Column 5, line 60 through column 6, line 10 and claim 8 (mixtures of two listed materials can be used in oxide).* Subramanian teaches that the first element can be selected from lanthanum, neodymium, yttrium or cerium, materials from Group 2 or 3 of the periodic table. *Column 5, lines 60-68 (lanthanum (La), neodymium (Nd), yttrium (Y), cerium(Ce)).* The second element can be selected from niobium or tantalum, materials from Group 5 of the periodic table. *Column 5, lines 60-68 (niobium (Nb), tantalum (Ta)).*

Claim 2, 12: the article can be a nickel base superalloy article. *Column 4, lines 5-10.*

Claim 3: the article can be component in a gas turbine engine. *Column 3, lines 45-65.*

Claim 4, 14: the bond coat can be an aluminum containing overlay bond coat. *Column 4, lines 10-40.*

Claim 5, 12: the primary ceramic can be yttria stabilized zirconia. *Column 4, lines 45-60.*

Claim 6, 15: the first element can be lanthanum or neodymium. *Column 5, lines 60-68.*

Claim 7, 16: the second element can be tantalum or niobium. *Column 5, lines 60-68.*

Claim 8, 17: the composition can be a grouping of lanthanum and tantalum, neodymium and tantalum, etc. *Column 5, lines 60-68, as the mixtures can be used.*

Claim 9, 18: the first and second elements can be co-deposited. *Column 5, lines 40-50 (when more than one element used, they are applied at the same time).*

Claim 10: the first and second elements can be co-deposited from a liquid solution. *Column 5, lines 40-50 (sol-gel would be liquid).*

Subramanian teaches all the features of these claims except the atomic ratio of the amount of the first element to the second element.

However, Subramanian does teach that the materials are advantageously selected based on their phase stability and possible reaction products. *Column 7, lines*

10-20. The reaction products are desired to have a low tendency to sinter. *Column 7, lines 10-20*

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Subramanian to perform routine experimentation to optimize the amount of each element to be used when using a two part mixture of materials, because Subramanian teaches that materials should be selected for their possible reaction products, phase stability and low tendency to sinter, and thus one of ordinary skill in the art would optimize the mixtures to be sure that the required features of Subramanian are met. As a result, the provided atomic ratio of the two materials in optimized amounts would be within the claimed range.

4. Claim 13 stands finally rejected under 35 U.S.C. 103(a) as being unpatentable over Subramanian as applied to claims 1-12 and 14-20 above, and further in view of Taylor et al (US 5520516).

Subramanian teaches all the features of these claims except that the primary ceramic coating is of yttria stabilized zirconia with 7 percent yttria by weight.

However, Taylor teaches applying a yttria stabilized zirconia coat onto a bond coating on a gas turbine engine component. *Column 5, lines 20-40.* The zirconia coat is desirably 7 percent yttria by weight. *Column 5, lines 20-40.*

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Subramanian to use yttria stabilized zirconia with 7

percent yttria by weight as the primary ceramic as suggested by Taylor to provide a desirable coating system because Subramanian teaches that yttria stabilized zirconia can be used on turbine components, and Taylor teaches that a desirable percentage of yttria in zirconia when coating ytteria stabilized zirconia on turbine components is 7 percent by weight.

(10) Response to Argument

Ground 1. The rejection of claims 1, 2, 5-12 and 15-20 under the doctrine of obviousness-type double patenting over claims 14-18 of US Patent 6,887,588

1.A) Claims 1, 6, 7

Appellant Arguments

Appellant argues that claim 1 includes a limitation that a first element must be selected from Group 2 or Group 3 of the periodic table and a second element must be selected from Group 5 of the periodic table, in the stabilization composition or sintering-inhibitor region and that the atomic ratio of the amount of the first element to the amount of the second element is at least 1:3 According to appellant, neither of these features is taught by 6,887,588. Moreover, the Examiner's position that 6,887,588 provides that one or more of the listed materials can be selected, which would include selection of one of Group 2 or 3 of the periodic table and one of Group 5 of the periodic table (from the listed materials), does not provide the claimed subject material, as a teaching of the selection of one or more of a list of elements is not the same as a teaching

that a first element must be selected from one subgroup and a second element must be selected from a second subgroup, according to appellant. As to the Examiner's position that the ratios of the inhibitor elements would be suggested through routine experimentation to optimize the amounts of each material to be used such that desirable inhibition is provided, appellant argues that there are tight limits on such usage, whereby a particular parameter must first be recognized as a result effective variable before the determination of optimum or workable ranges through routine experimentation. In this case, according to appellant, the parameter in question is "the atomic ratio of the amount of the first element to the second element." The first element is selected from Group 2 or 3 of the periodic table and the second element is selected from Group 5 of the periodic table. According to appellant, nothing in claims 14-18 of 6,887,588 suggests that these pairings have significance, and specifically do not suggest anything about the ratios of the first and second element, and accordingly, the optimization of the atomic ratio of the amount of the first element to the second element" cannot be a matter of routine.

The Examiner's Response

The Examiner has reviewed these arguments, however, the rejection is maintained. As to the selection from the given list of elements of 6,887,588 to produce the claimed selection of a first element from Group 2 or 3 of the periodic table and a second element from Group 5 of the periodic table, it is the Examiner's position that this is provided by claims 16 and 18 of 6,887,588, which teach to provide an inhibitor

precursor material (which will be infiltrated as in claims 14 and 17) comprising "an inhibitor element selected from the group consisting of barium, strontium, tantalum, lanthanum, neodymium, ytterbium, gadolinium, niobium, and mixtures thereof". As a result, the specific list of materials to be used, as taught by the claims of 6,887,588 is the individual listed elements alone or all possible mixtures of those elements with each other. Since lanthanum and neodymium are from Group 2/3 of the periodic table and niobium and tantalum are from Group 5 of the periodic table, the use of mixtures of a first element from Group 2/3 of the periodic table and a second element of Group 5 of the periodic table are clearly provided. While 6,887,588 provides for other combinations that are outside of the scope of appellant's claims, a reference does not have to specifically describe only the claimed invention of appellant, using the words and groupings of appellant, but rather the reference merely has to provide a teaching that would provide one of the claimed possibilities of appellant. For example, if a claim of an application has a Markush group with 10 possible elements to be selected from, a reference that discloses a single one of those elements will read on the claim and can be used to reject it. As to the ratio of the first element to the second element, the Examiner has taken the position that the claims teach to select one or more from the listed inhibitor materials, and one of ordinary skill in the art would provide routine experimentation to optimize the amounts of each material to be used such that desirable inhibition is provided. The particular parameter of the amount of each inhibitor materials to be used when selected from the listed inhibitor materials would clearly be

recognized as a result effective variable such that the determination of optimum or workable ranges of the variable would be characterized as routine experimentation, because the material is specifically described as the inhibitor material, which provides the claimed sintering inhibition, and one would need to know how much to use to provide desired inhibiting. Since the amounts of each element used would be optimized, the resulting ratio of the elements would occur as claimed. Appellant has made no showing of criticality or unexpected benefits as to this range.

1.B) Claim 2

Appellant Arguments

According to appellant, claim 2 incorporates the features of claim 1 and further requires that the article be a nickel base superalloy article, which is not taught by claims 14-18. The rejection by the Examiner relies upon "well known" prior art. Appellant states that they "timely traversed this attempt to rely on "well known" prior art and asked for the citation of a prior art reference, as provided in MPEP 2144.03. There was no response."

The Examiner's Response

The Examiner has reviewed these arguments, however, the rejection is maintained. As to the limitations of claim 1, the Examiner maintains the rejection of claim 1 for the reasons given in ***The Examiner's Response*** as to claims 1, 6 and 7 above. In the rejection of claim 2, the Examiner noted that it is well known in the art of thermal spraying and turbine use that the substrate be a nickel base super alloy. As to

appellant's statement that they "timely traversed this attempt to rely on "well known" prior art and asked for the citation of a prior art reference, as provided in MPEP 2144.03. There was no response.", the Examiner strongly disagrees. As noted in the Advisory Action of August 10, 2005, as to the traversal by applicant of the use of nickel base superalloy being "well known" in the July 25, 2005 after final arguments, this traversal was not made in the next reply after the assertion was made (the assertion was made in the Office Action of March 28, 2005). Thus, the traversal was not timely. Furthermore, as a courtesy, the Examiner then noted in the Advisory Action that previously cited references to Ackerman et al (US 2003/0059633) (paragraph [0020]) and Subramanian (US 6677064) (column 4, lines 5-10) both indicate the well known use of nickel base superalloy substrates in the thermal spraying art.

1.C) Claim 5

Appellant Arguments

According to appellant, claim 5 incorporates the limitations of claim 1 and further requires that the primary ceramic coating be yttria stabilized zirconia, which is not taught by claims 14-18. The rejection by the Examiner relies upon "well known" prior art. Appellant states that they "timely traversed this attempt to rely on "well known" prior art and asked for the citation of a prior art reference, as provided in MPEP 2144.03. There was no response."

The Examiner's Response

The Examiner has reviewed these arguments, however, the rejection is maintained. As to the limitations of claim 1, the Examiner maintains the rejection of claim 1 for the reasons given in ***The Examiner's Response*** as to claims 1, 6 and 7 above. In the rejection of claim 5, the Examiner noted that it is well known in the art of thermal spraying and turbine use that the thermal barrier material be yttria stabilized zirconia. As to appellant's statement that they "timely traversed this attempt to rely on "well known" prior art and asked for the citation of a prior art reference, as provided in MPEP 2144.03. There was no response.", the Examiner strongly disagrees. As noted in the Advisory Action of August 10, 2005, as to the traversal by applicant of the use of yttria stabilized zirconia being "well known" in the July 25, 2005 after final arguments, this traversal was not made in the next reply after the assertion was made (the assertion was made in the Office Action of March 28, 2005). Thus, the traversal was not timely. Furthermore, as a courtesy, the Examiner then noted in the Advisory Action that previously cited references to Ackerman et al (US 2003/0059633) (paragraph [0028]) and Subramanian (US 6677064) (column 4, lines 45-60) both indicate the well known use of yttria stabilized zirconia as the thermal barrier material in the thermal spraying art.

1.D) Claim 8

Appellant Arguments

Appellant argues that claim 8 incorporates the limitations of claim 1 and further requires specific elemental pairs that can be used in the stabilization composition and 6,887,588 has no such teaching of these pairs, with the rejection relying on routine

experimentation. However, appellant argues that there is nothing in claims 14-18 suggesting such a pairing would be beneficial, and thus pointing the way toward experimentation in that direction.

The Examiner's Response

The Examiner has reviewed these arguments, however, the rejection is maintained. As to the limitations of claim 1, the Examiner maintains the rejection of claim 1 for the reasons given in ***The Examiner's Response*** as to claims 1, 6 and 7 above. As discussed with regard to claim 1 above, as to the selection from the given list of elements of 6,887,588 to produce the claimed selection of a first element from Group 2 or 3 of the periodic table and a second element from Group 5 of the periodic table, it is the Examiner's position that this is provided by claims 16 and 18 of 6,887,588, which teach to provide an inhibitor precursor material (which will be infiltrated as in claims 14 and 17) comprising "an inhibitor element selected from the group consisting of barium, strontium, tantalum, lanthanum, neodymium, ytterbium, gadolinium, niobium, and mixtures thereof". As a result, the specific list of materials taught by 6,887,588 is the individual listed elements alone or all possible mixtures of those elements with each other. Since lanthanum and neodymium are from Group 2/3 of the periodic table and niobium and tantalum are from Group 5 of the periodic table, the use of mixtures of a first element from Group 2/3 of the periodic table and a second element of Group 5 of the periodic table are clearly provided. As well, the resulting combinations of "mixtures thereof" would include lanthanum and tantalum; neodymium and tantalum;

lanthanum and niobium; and neodymium and niobium as claimed, since these are possible combinations of the listed materials.

1.E) Claims 9, 10

Appellant Arguments

Appellant argues that claims 9-10 incorporate the limitations of claim 1 and further require "co-depositing" the first and second elements. However, appellant argues that there is nothing in claims 14-18 suggesting the approach for depositing sintering inhibitors, much less teaching the required co-deposition.

The Examiner's Response

The Examiner has reviewed these arguments, however, the rejection is maintained. As to the limitations of claim 1, the Examiner maintains the rejection of claim 1 for the reasons given in ***The Examiner's Response*** as to claims 1, 6 and 7 above. As to the suggested co-depositing of first and second elements, claim 17, for example, of 6,887,588 provides for the "liquid phase infiltrating of an inhibitor precursor material" by "forming a liquid solution containing the inhibitor precursor material dissolved in a solvent, and contacting the liquid solution to the thermal barrier coating". Claim 18 of 6,887,588 which depends from claim 17 provides that the inhibitor precursor material comprises "an inhibitor element selected from the group consisting of barium, strontium, tantalum, lanthanum, neodymium, ytterbium, gadolinium, niobium, and mixtures thereof". As a result, when using an inhibitor precursor material comprising a mixture of two of the listed elements, the liquid solution containing the precursor

material will contain the two elements and the two elements will be "co-deposited" when the liquid solution is contacted to the thermal barrier coating.

1.F) Claim 11

Appellant Arguments

Appellant argues that claim 11 incorporates the limitations of claim 1 and further requires depositing the stabilization compound such that the atomic ratio of the amount of the first element to the amount of the second element is at least 1:1, with the rejection relying on routine experimentation. However, appellant argues that there is nothing in claims 14-18 suggesting that adjusting the ratios of elements would have any beneficial effect, pointing the way towards experimentation in that direction. Appellant further incorporates the discussion as to the rejection of claim 1 as to this issue.

The Examiner's Response

The Examiner has reviewed these arguments, however, the rejection is maintained. As to the limitations of claim 1, the Examiner maintains the rejection of claim 1 for the reasons given in ***The Examiner's Response*** as to claims 1, 6 and 7 above. As discussed with regard to claim 1, as to the ratio of the first element to the second element, the Examiner has taken the position that the claims teach to select one or more from the listed inhibitor materials, and one of ordinary skill in the art would provide routine experimentation to optimize the amounts of each material to be used such that desirable inhibition is provided. The particular parameter of the amount of each inhibitor materials to be used when selected from the listed inhibitor materials would

clearly be recognized as a result effective variable such that the determination of optimum or workable ranges of the variable would be characterized as routine experimentation, because the material is specifically described as the inhibitor material, which provides the claimed sintering inhibition, and one would need to know how much to use to provide desired inhibiting. Since the amount of each element used would be optimized, the resulting ratio of the optimized materials would occur as claimed. As to the specific use of a 1:1 ratio, appellant has provided no showing as to the criticality or unexpected benefits of such a ratio.

1.G) Claims 12 and 15-16

Appellant Arguments

Appellant argues that claim 12 requires the selection of the elements from Group 2 or 3 of the periodic Table and Group 5 of the periodic table and the atomic ratios of at least 1:3, as in claim 1. Appellant incorporates the prior discussion of claim 1. The claim also requires a nickel base superalloy article, as in claim 2. Appellant incorporates the prior discussion of claim 2. The claim also requires a yttria stabilized zirconia primary coating, as in claim 5. Appellant incorporates the prior discussion of claim 5.

The Examiner's Response

The Examiner has reviewed these arguments, however, the rejection is maintained. As appellant has incorporated the arguments in regard to claims 1, 2 and 5, the Examiner maintains the rejection for the reasons given in ***The Examiner's Response*** as to claims 1, 6 and 7 and claim 2 and claim 5 above.

1.H) Claim 17

Appellants Arguments

Appellant argues that claim 17 incorporates the limitations of claim 12. Appellant incorporates the prior discussion of claim 12. Appellant also argues that claim 17 requires specific elemental pairs that can be used in the stabilization composition and 6,887,588 has no such teaching of these pairs, with the rejection relying on routine experimentation. However, appellant argues that there is nothing in claims 14-18 suggesting such a pairing would be beneficial, and thus pointing the way toward experimentation in that direction.

The Examiner's Response

The Examiner has reviewed these arguments, however, the rejection is maintained. As to the incorporation of the arguments of claim 12, the Examiner maintains the rejection for the reasons given in ***The Examiner's Response*** as to claims 12 and 15-16 above. Furthermore, as to the use of the specific elemental pairs, as discussed with regard to claim 8 and claim 1 above, as to the selection from the given list of elements of 6,887,588 to produce the claimed selection of a first element from Group 2 or 3 of the periodic table and a second element from Group 5 of the periodic table, it is the Examiner's position that this is provided by claims 16 and 18 of 6,887,588, which teach to provide an inhibitor precursor material (which will be infiltrated as in claims 14 and 17) comprising "an inhibitor element selected from the group consisting of barium, strontium, tantalum, lanthanum, neodymium, ytterbium, gadolinium, niobium, and

mixtures thereof". As a result, the specific list of materials taught by 6,887,588 is the individual listed elements alone or all possible mixtures of those elements with each other. Since lanthanum and neodymium are from Group 2/3 of the periodic table and niobium and tantalum are from Group 5 of the periodic table, the use of mixtures of a first element from Group 2/3 of the periodic table and a second element of Group 5 of the periodic table are clearly provided. While 6,887,588 provides for other combinations that are outside of the scope of appellant's claims, a reference does not have to specifically describe only the claimed invention of appellant, using the words and groupings of appellant, but rather the reference merely has to provide a teaching that would provide one of the claimed possibilities of appellant. For example, if a claim of an application has a Markush group with 10 possible elements to be selected from, a reference that discloses a single one of those elements will read on the claim and can be used to reject it. As well, the resulting combinations of "mixtures thereof" would include lanthanum and tantalum; neodymium and tantalum; lanthanum and niobium; and neodymium and niobium as claimed, since these are possible combinations of the listed materials.

1.I) Claim 18

Appellant Arguments

Appellant argues that claim 18 incorporates the limitations of claim 12. Appellant incorporates the prior discussion of claim 12. Appellant also argues that claim 18 require "co-depositing" the first and second elements. However, appellant argues that

there is nothing in claims 14-18 suggesting the approach for depositing sintering inhibitors, much less teaching the required co-deposition.

The Examiner's Response

The Examiner has reviewed these arguments, however, the rejection is maintained. As to the incorporation of the arguments of claim 12, the Examiner maintains the rejection for the reasons given in ***The Examiner's Response*** as to claim 12 and 15-16 above. Furthermore, as to the "co-depositing" of first and second elements, as discussed with regards to claims 9-10 above, claim 17, for example, of 6,887,588 provides for the "liquid phase infiltrating of an inhibitor precursor material" by "forming a liquid solution containing the inhibitor precursor material dissolved in a solvent, and contacting the liquid solution to the thermal barrier coating". Claim 18 of 6,887,588, which depends from claim 17 provides that the inhibitor precursor material comprises "an inhibitor element selected from the group consisting of barium, strontium, tantalum, lanthanum, neodymium, ytterbium, gadolinium, niobium, and mixtures thereof". As a result, when using an inhibitor precursor material comprising a mixture of two of the listed elements, the liquid solution containing the precursor material will contain the two elements and the two elements will be "co-deposited" when the liquid solution is contacted to the thermal barrier coating.

1.J) Claim 19

Appellant Arguments

Appellant argues that claim 19 incorporates the limitations of claim 12. Appellant incorporates the prior discussion of claim 12. Appellant also argues that claim 19 requires depositing the stabilization compound such that the atomic ratio of the amount of the first element to the amount of the second element is at least 1:1, with the rejection relying on routine experimentation. However, appellant argues that there is nothing in claims 14-18 suggesting that adjusting the ratios of elements would have any beneficial effect, pointing the way towards experimentation in that direction. Appellant further incorporates the discussion as to the rejection of claim 1 as to this issue.

The Examiner's Response

The Examiner has reviewed these arguments, however, the rejection is maintained. As to the incorporation of the arguments of claim 12, the Examiner maintains the rejection for the reasons given in ***The Examiner's Response*** as to claim 12 and 15-16 above. Furthermore, as to the atomic ratio, as discussed with regard to claim 11 and claim 1, as to the ratio of the first element to the second element, the Examiner has taken the position that the claims teach to select one or more from the listed inhibitor materials, and one of ordinary skill in the art would provide routine experimentation to optimize the amounts of each material to be used such that desirable inhibition is provided. The particular parameter of the amount of each inhibitor materials to be used when selected from the listed inhibitor materials would clearly be recognized as a result effective variable such that the determination of optimum or workable ranges of the variable would be characterized as routine experimentation,

because the material is specifically described as the inhibitor material, which provides the claimed sintering inhibition, and one would need to know how much to use to provide desired inhibiting. Since the amount of each element used would be optimized, the claimed ratio would result from the optimized element amounts. As to the specific use of a 1:1 ratio, appellant has provided no showing as to the criticality or unexpected benefits of such a ratio.

1.K) Claim 20

Appellant Arguments

Appellant argues that claim 20 requires the selection of the elements from Group 2 or 3 of the periodic Table and Group 5 of the periodic table and the atomic ratios of at least 1:3, as in claims 1 and 12. Appellant incorporates the prior discussion of claims 1 and 12.

The Examiner's Response

The Examiner has reviewed these arguments, however, the rejection is maintained. As appellant has incorporated the arguments in regard to claims 1 and 12 the Examiner maintains the rejection for the reasons given in *The Examiner's Response* as to claims 1, 6 and 7 and claims 12 and 15-16 above.

Ground 2: The rejection of claims 1-20 under 35 USC 103 as unpatentable over Ackerman et al US 2003/0059633

2.A) Claims 1-5

Appellant Arguments

Appellant argues that claim 1 requires a stabilization composition comprising a first element selected from Group 2 or 3 of the periodic table and a second element selected from Group 5 of the periodic table. Appellant argues that Ackerman does not provide this teaching, merely that the Examiner has provided a new standard of obviousness, "can be", which provides that a hindsight reconstruction of the of a method consistent with the quoted claim limitation "can be" created by a patent examiner with access to the pending application. Appellant argues that the correct standard is that the prior art must teach the limitations of the claims, with no mention of the "can be" standard in the MPEP or case authority. Appellant argues that Ackerman never teaches the claimed selection of a first element selected from Group 2 or 3 of the periodic table and a second element selected from Group 5 of the periodic table, merely a disclosure of a number of elements that are in Groups 2, 3 and 5, but no disclosure or teaching of using combinations of specific elements, one from Group 2 or 3 and the other from Group 5 as claimed. Appellant argues that the explanation of the rejection asserts that it would be obvious from Ackerman to select elements in particular combinations to meet the present claim formulations, but in fact there is no teaching that a first element must be Group 2 or Group 3 and a second element must be Group 5. According to the proposed "can be" standard, the first element can be of various Groups as can the second element, but note of these combinations are taught by the reference. With the advantage of hindsight using the present disclosure, the patent

examiner "can" always make the right decisions about which elements "can be" selected and how they "can be" ordered. However, appellant argues, the proposed "can be" standard is directly contrary to the law governing section 103 rejections, which requires that the prior art reference teach the claim limitation.

Appellant argues that claim 1 further requires that the atomic ratio of the amount of the first element to the amount of the second element is at least 1:3. Appellant argues that before routine experimentation can be used to optimize a particular parameter, the parameter must first be recognized as a result-effective variable. Here, appellant argues, there is no teaching that the first element must be a Group 2 or 3 element and second element must be a Group 5 element. Under the examiner's incorrect "can be" standard, other combinations are equally good. As well, there is no recognition in the reference that the ratio of the first to second elements has any significance. Third, there is no indication in the Ackerman publication that if there is an atomic excess of the Group 5 second element, sintering is promoted, the opposite of the desirable sintering retardation that is achieved in the present approach. Fourth, there is no teaching that the recited ratio, 1:3, would yield any advantageous results.

The Examiner's Response

The Examiner has reviewed appellant's arguments, however, the rejection is maintained. As to the selection from the given list of elements of Ackerman to produce the claimed selection of a first element from Group 2 or 3 of the periodic table and a second element from Group 5 of the periodic table, it is the Examiner's position that this

is provided by Ackerman at paragraph [0032], which teaches to provide an inhibitor precursor material (which will be infiltrated as in paragraph [0036]) including "an inhibitor element selected from the group consisting of barium, strontium, tantalum, lanthanum, neodymium, gadolinium, niobium, and mixtures thereof". As a result, the specific list of materials taught by Ackerman to be used is the individual listed elements alone or all possible mixtures of those elements with each other. Since lanthanum and neodymium are from Group 2/3 of the periodic table and niobium and tantalum are from Group 5 of the periodic table, the use of mixtures of a first element from Group 2/3 of the periodic table and a second element of Group 5 of the periodic table are clearly provided. Ackerman, of course, provides for other combinations that are outside of the scope of appellant's claims, thus the Examiner has noted that Ackerman teaches that the first element "can be" from Group 2 or 3 and the second element "can be" from Group 5. However, the Examiner is not attempting to create a new legal standard. As discussed in MPEP 2131.02, a reference that clearly names the claimed species anticipates the claim no matter how many other species are named in a reference. Thus, a reference does not have to specifically describe only the claimed invention of appellant, using the words and groupings of appellant, but rather the reference merely has to provide a teaching that would provide one of the claimed possibilities of appellant. For example, if a claim of an application has a Markush group with 10 possible elements to be selected from, a reference that discloses a single one of those elements will read on the claim and can be used to reject it. Here, the Examiner is

not saying that it would have been obvious to select elements to meet the present claim, but rather that the listing of elements and mixtures provides combinations of elements that specifically meet appellant's listed material requirements. The fact that appellant has described the listing of the materials in a different way than the reference does not prevent the resulting materials provided from overlapping that of appellant. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). Here, the information as to elements that can be used is provided in Ackerman.

As to the atomic ratio of the first element to the second element, the Examiner has taken the position that Ackerman teaches to select one or more from the listed inhibitor materials, and one of ordinary skill in the art would provide routine experimentation to optimize the amounts of each material to be used such that desirable inhibition is provided. The particular parameter of the amount of each inhibitor materials to be used when selected from the listed inhibitor materials would clearly be recognized as a result effective variable such that the determination of optimum or workable ranges of the variable would be characterized as routine experimentation,

because the material is specifically described as the inhibitor material, which provides the claimed sintering inhibition, and one would need to know how much to use to provide desired inhibiting. As discussed in Ackerman in paragraph [0034], mixtures can be used "as long as the reaction products meet the other requirements set forth herein." Since the amounts of each element used would be optimized, the resulting ratio of the elements would occur as claimed. Appellant has made no showing of criticality or unexpected benefits as to this range. Thus, while Ackerman may not show any discussion of benefits of the ratio range as claimed, the ratio range would appear to flow naturally from the optimization of the amounts of the individual elements. Also, while Ackerman does not specifically describe problems if an atomic excess of Group 5 second element is used, Ackerman specifically desires sintering inhibition and selection of amounts that would provide such inhibition would be part of the routine experimentation process for optimizing amounts of the elements used. Finally, while Ackerman does not teach the specific claimed ratio, ratios within the claimed range would flow naturally from the optimization of the amounts of the individual elements.

2.B) Claim 6

Appellant Arguments

According to appellant, claim 6 incorporates the limitations of claim 1 and further requires that the first element is selected from the group consisting of lanthanum, neodymium, and cerium. According to appellant, Ackerman has no such teaching, rather using the Examiner's "can be" standard, it is equally true that the

second element can be selected from the group consisting of lanthanum, neodymium, and cerium; or that the first element can be selected from the group consisting of tantalum and niobium; or any other group of associated elements.

The Examiner's Response

The Examiner has reviewed these arguments, however, the rejection is maintained. As to the limitations of claim 1, the Examiner maintains the rejection of claim 1 for the reasons given in ***The Examiner's Response*** as to claims 1-5 (2.A) Claims 1-5) above. As to the specific selection of the first element as claimed in claim 6, the arguments as discussed in regard to claim 1 as to the "can be" standard also apply in this case. As to the selection from the given list of elements of Ackerman to produce the claimed selection of a first element from lanthanum, neodymium and cerium, it is the Examiner's position that this is provided by Ackerman at paragraph [0032], which teaches to provide an inhibitor precursor material (which will be infiltrated as in paragraph [0036]) including "an inhibitor element selected from the group consisting of barium, strontium, tantalum, lanthanum, neodymium, gadolinium, niobium, and mixtures thereof". As a result, the specific list of materials taught by Ackerman to be used is the individual listed elements alone or all possible mixtures of those elements with each other. Since lanthanum and neodymium are listed, the use of mixtures with a first element from the group of lanthanum, neodymium and cerium is provided. Ackerman, of course, provides for other combinations that are outside of the scope of appellant's claims, thus the Examiner has noted that Ackerman teaches that the first

element "can be" from lanthanum or neodymium. However, the Examiner is not attempting to create a new legal standard. As discussed in MPEP 2131.02, a reference that clearly names the claimed species anticipates the claim no matter how many other species are named in a reference. Thus, a reference does not have to specifically describe only the claimed invention of appellant, using the words and groupings of appellant, but rather the reference merely has to provide a teaching that would provide one of the claimed possibilities of appellant. For example, if a claim of an application has a Markush group with 10 possible elements to be selected from, a reference that discloses a single one of those elements will read on the claim and can be used to reject it. Here, the Examiner is not saying that it would have been obvious to select elements to meet the present claim, but rather that the listing of elements and mixtures provides combinations of elements that specifically meet appellant's listed material requirements. The fact that appellant has described the listing of the materials in a different way than the reference does not prevent the resulting materials provided from overlapping that of appellant.

2.C) Claim 7

Appellant Arguments

According to appellant, claim 7 incorporates the limitations of claim 1 and further requires that the second element is selected from the group consisting of tantalum and niobium. According to appellant, Ackerman has no such teaching, rather using the Examiner's "can be" standard, it is equally true that the second element can

be selected from the group consisting of lanthanum, neodymium, and cerium; or that the first element can be selected from the group consisting of tantalum and niobium; or any other group of associated elements.

The Examiner's Response

The Examiner has reviewed these arguments, however, the rejection is maintained. As to the limitations of claim 1, the Examiner maintains the rejection of claim 1 for the reasons given in ***The Examiner's Response*** as to claims 1-5 (2.A) Claims 1-5) above. As to the specific selection of the first element as claimed in claim 7, the arguments as discussed in regard to claim 1 as to the "can be" standard also apply in this case. As to the selection from the given list of elements of Ackerman to produce the claimed selection of a second element from tantalum or niobium, it is the Examiner's position that this is provided by Ackerman at paragraph [0032], which teaches to provide an inhibitor precursor material (which will be infiltrated as in paragraph [0036]) including "an inhibitor element selected from the group consisting of barium, strontium, tantalum, lanthanum, neodymium, gadolinium, niobium, and mixtures thereof". As a result, the specific list of materials taught by Ackerman to be used is the individual listed elements alone or all possible mixtures of those elements with each other. Since tantalum and niobium are listed, the use of mixtures with a second element from the group of tantalum and niobium is provided. Ackerman, of course, provides for other combinations that are outside of the scope of appellant's claims, thus the Examiner has noted that Ackerman teaches that the second element "can be" from

tantalum or niobium. However, the Examiner is not attempting to create a new legal standard. As discussed in MPEP 2131.02, a reference that clearly names the claimed species anticipates the claim no matter how many other species are named in a reference. Thus, a reference does not have to specifically describe only the claimed invention of appellant, using the words and groupings of appellant, but rather the reference merely has to provide a teaching that would provide one of the claimed possibilities of appellant. For example, if a claim of an application has a Markush group with 10 possible elements to be selected from, a reference that discloses a single one of those elements will read on the claim and can be used to reject it. Here, the Examiner is not saying that it would have been obvious to select elements to meet the present claim, but rather that the listing of elements and mixtures provides combinations of elements that specifically meet appellant's listed material requirements. The fact that appellant has described the listing of the materials in a different way than the reference does not prevent the resulting materials provided from overlapping that of appellant.

2.D) Claim 8

Appellant Arguments

According to appellant, claim 8 incorporates the limitations of claim 1 and further requires that the stabilization composition is selected from the group consisting of lanthanum and tantalum, neodymium and tantalum, lanthanum and niobium, neodymium and niobium, and cerium and tantalum. According to appellant, Ackerman has no such teaching, rather using the Examiner's "can be" standard, it is

equally true that the elemental pairings can be lanthanum and niobium, barium and strontium, barium and tantalum, etc.

The Examiner's Response

The Examiner has reviewed these arguments, however, the rejection is maintained. As to the limitations of claim 1, the Examiner maintains the rejection of claim 1 for the reasons given in ***The Examiner's Response*** as to claims 1-5 (2.A) Claims 1-5) above. As to the specific combination of elements as claimed in claim 8, the arguments as discussed in regard to claim 1 as to the "can be" standard also apply in this case. As to the selection from the given list of elements of Ackerman to produce the claimed combination of elements, it is the Examiner's position that this is provided by Ackerman at paragraph [0032], which teach to provide an inhibitor precursor material (which will be infiltrated as in paragraph [0036]) including "an inhibitor element selected from the group consisting of barium, strontium, tantalum, lanthanum, neodymium, gadolinium, niobium, and mixtures thereof". As a result, the specific list of materials taught by Ackerman to be used is the individual listed elements alone or all possible mixtures of those elements with each other. Since lanthanum, neodymium, tantalum and niobium are listed, the use of mixtures of a combination of these elements is provided. Ackerman, of course, provides for other combinations that are outside of the scope of appellant's claims, thus the Examiner has noted that Ackerman teaches that the combinations of element "can be" as claimed. However, the Examiner is not attempting to create a new legal standard. As discussed in MPEP 2131.02, a reference

that clearly names the claimed species anticipates the claim no matter how many other species are named in a reference. Thus, a reference does not have to specifically describe only the claimed invention of appellant, using the words and groupings of appellant, but rather the reference merely has to provide a teaching that would provide one of the claimed possibilities of appellant. For example, if a claim of an application has a Markush group with 10 possible elements to be selected from, a reference that discloses a single one of those elements will read on the claim and can be used to reject it. Here, the Examiner is not saying that it would have been obvious to select elements to meet the present claim, but rather that the listing of elements and mixtures provides combinations of elements that specifically meet appellant's listed material requirements. The fact that appellant has described the listing of the materials in a different way than the reference does not prevent the resulting materials provided from overlapping that of appellant.

2.E) Claims 9 and 10

Appellant Arguments

According to appellant, claims 9 and 10 incorporate the limitations of claim 1 and further require co-depositing the first element and the second element. According to appellant, the explanation of the rejection references paragraph [0036] of Ackerman as teaching this limitation, but while this paragraph speaks of supplying the elements in a liquid form, it does not specifically teach that multiple elements may be supplied in a single liquid.

The Examiner's Response

The Examiner has reviewed these arguments, however, the rejection is maintained. As to the limitations of claim 1, the Examiner maintains the rejection of claim 1 for the reasons given in ***The Examiner's Response*** as to claims 1-5 (2.A) Claims 1-5) above. As to the suggested co-depositing of first and second elements, paragraph [0036], for example, of Ackerman provides that "The inhibitor precursor material – preferably including one or more of the inhibitor elements listed above – is provided in a nonsolid (liquid or gaseous) form that can flow into the gaps 50." The material is described as being deposited into the thermal barrier coating by infiltrating. It is the Examiner's understanding that the inclusion of "one or more of the inhibitor elements" in the liquid for depositing would include the inclusion of two inhibitor elements, which would be co-deposited by the description given of the infiltrating method. Note the list of inhibitor elements provided at paragraph [0032] includes tantalum, lanthanum, neodymium and niobium.

2.F) Claim 11

Appellant Arguments

According to appellant, claim 11 incorporates the limitations of claim 1, and further requires that the stabilization compound is deposited such that the atomic ratio of the amount of the first element to the amount of the second element is at least 1:1. According to appellant, Ackerman has no such teaching. Appellant references the

discussion of the "1:3" limitation in relation to claim 1. Appellant argues that there is no teaching in Ackerman that an atomic ratio of 1:1 has any particular significance.

The Examiner's Response

The Examiner has reviewed these arguments, however, the rejection is maintained. As to the limitations of claim 1, the Examiner maintains the rejection of claim 1 for the reasons given in ***The Examiner's Response*** as to claims 1-5 (2.A) Claims 1-5) above. As discussed with regard to claim 1, as to the atomic ratio of the first element to the second element, the Examiner has taken the position that Ackerman teaches to select one or more from the listed inhibitor materials, and one of ordinary skill in the art would provide routine experimentation to optimize the amounts of each material to be used such that desirable inhibition is provided. The particular parameter of the amount of each inhibitor materials to be used when selected from the listed inhibitor materials would clearly be recognized as a result effective variable such that the determination of optimum or workable ranges of the variable would be characterized as routine experimentation, because the material is specifically described as the inhibitor material, which provides the claimed sintering inhibition, and one would need to know how much to use to provide desired inhibiting. As discussed in Ackerman in paragraph [0034], mixtures can be used "as long as the reaction products meet the other requirements set forth herein." Since the amounts of each element used would be optimized, the resulting ratio of the elements would occur as claimed. Appellant has made no showing of criticality or unexpected benefits as to this range of

at least 1:1. Thus, while Ackerman may not show any discussion of benefits of the ratio range as claimed, the ratio range would appear to flow naturally from the optimization of the amounts of the individual elements.

2.G) Claims 12-14

Appellant Arguments

According to appellant, claim 12 requires that the stabilization composition comprises a first element is selected from the Group 2 or 3 of the periodic table and a second element from Group 5 of the periodic table. Appellant then goes on to restate the "can be" arguments as discussed with regard to this feature in claim 1 (see 2.A) Claims 1-5 above). According to appellant, claim 12 further requires that the atomic ratio of the amount of the first element to the amount of the second element is at least 1:3. Appellant then goes on to restate the arguments against the use of routine experimentation as discussed with regard to this feature in claim 1 (see 2.A) Claims 1-5 above).

The Examiner's Response

The Examiner has reviewed these arguments, however, the rejection is maintained. As appellant's arguments are restatements of the arguments given with regard to claim 1, the Examiner maintains the rejection for the reasons given in ***The Examiner's Response*** as to claims 1-5 above (see 2.A) Claims 1-5 above).

2.H) Claim 15

Appellant Arguments

According to appellant, claim 15 incorporates the limitations of claim 12 and further requires that the first element is selected from the group consisting of lanthanum, neodymium, and cerium. According to appellant, who restates the arguments given as to claim 6 (see 2.B) Claim 6 above), Ackerman has no such teaching, rather using the Examiner's "can be" standard, it is equally true that the second element can be selected from the group consisting of lanthanum, neodymium, and cerium; or that the first element can be selected from the group consisting of tantalum and niobium; or any other group of associated elements.

The Examiner's Response

The Examiner has reviewed these arguments, however, the rejection is maintained. As to the limitations of claim 12, the Examiner maintains the rejection of claim 12 for the reasons given in ***The Examiner's Response*** as to claims 12-14 (2.G) Claims 12-14) above. As appellant's further arguments are restatements of the arguments given with regard to claim 6, the Examiner maintains the rejection for the reasons given in ***The Examiner's Response*** as to claim 6 above (see 2.B) Claim 6 above).

2.I) Claim 16

Appellant Arguments

According to appellant, claim 16 incorporates the limitations of claim 12 and further requires that the second element is selected from the group consisting of tantalum and niobium. According to appellant, who restates the arguments given as to claim 7 (see 2.C) Claim 7 above), Ackerman has no such teaching, rather using the

Examiner's "can be" standard, it is equally true that the second element can be selected from the group consisting of lanthanum, neodymium, and cerium; or that the first element can be selected from the group consisting of tantalum and niobium; or any other group of associated elements.

The Examiner's Response

The Examiner has reviewed these arguments, however, the rejection is maintained. As to the limitations of claim 12, the Examiner maintains the rejection of claim 12 for the reasons given in ***The Examiner's Response*** as to claims 12-14 (2.G) Claims 12-14) above. As appellant's further arguments are restatements of the arguments given with regard to claim 7, the Examiner maintains the rejection for the reasons given in ***The Examiner's Response*** as to claim 7 above (see 2.C) Claim 7 above).

2.J) Claim 17

Appellant Arguments

According to appellant, claim 17 incorporates the limitations of claim 12 and further requires that the stabilization composition is selected from the group consisting of lanthanum and tantalum, neodymium and tantalum, lanthanum and niobium, neodymium and niobium, and cerium and tantalum. According to appellant, who restates the arguments given as to claim 8 (see 2.D) Claim 8 above), Ackerman has no such teaching, rather using the Examiner's "can be" standard, it is equally true that the elemental pairings can be lanthanum and niobium, barium and strontium, barium and tantalum, etc.

The Examiner's Response

The Examiner has reviewed these arguments, however, the rejection is maintained. As to the limitations of claim 12, the Examiner maintains the rejection of claim 12 for the reasons given in ***The Examiner's Response*** as to claims 12-14 (2.G) Claims 12-14) above. As appellant's further arguments are restatements of the arguments given with regard to claim 8, the Examiner maintains the rejection for the reasons given in ***The Examiner's Response*** as to claim 8 above (see 2.D) Claim 8 above).

2.K) Claim 18

Appellant Arguments

According to appellant, claim 18 incorporates the limitations of claim 12 and further requires co-depositing the first element and the second element. According to appellant, who restates the arguments given as to claims 9 and 10 (see 2.E) Claims 9 and 10 above), the explanation of the rejection references paragraph [0036] of Ackerman as teaching this limitation, but while this paragraph speaks of supplying the elements in a liquid form, it does not specifically teach that multiple elements may be supplied in a single liquid.

The Examiner's Response

The Examiner has reviewed these arguments, however, the rejection is maintained. As to the limitations of claim 12, the Examiner maintains the rejection of claim 12 for the reasons given in ***The Examiner's Response*** as to claims 12-14 (2.G) Claims 12-14) above. As appellant's further arguments are restatements of the

arguments given with regard to claims 9 and 10, the Examiner maintains the rejection for the reasons given in ***The Examiner's Response*** as to claims 9 and 10 above (see 2.E) Claims 9 and 10 above).

2.L) Claim 19

Appellant Arguments

According to appellant, claim 19 incorporates the limitations of claim 12, and further requires that the stabilization compound is deposited such that the atomic ratio of the amount of the first element to the amount of the second element is at least 1:1. According to appellant, who restates the arguments given as to claim 11 (see 2.F) Claim 11 above) Ackerman has no such teaching. Appellant references the discussion of the "1:3" limitation in relation to claim 1. Appellant argues that there is no teaching in Ackerman that an atomic ratio of 1:1 has any particular significance.

The Examiner's Response

The Examiner has reviewed these arguments, however, the rejection is maintained. As to the limitations of claim 12, the Examiner maintains the rejection of claim 12 for the reasons given in ***The Examiner's Response*** as to claims 12-14 (2.G) Claims 12-14)above. As appellant's further arguments are restatements of the arguments given with regard to claim 11, the Examiner maintains the rejection for the reasons given in ***The Examiner's Response*** as to claim 11 above (see 2.F) Claim 11 above).

2.M) Claim 20

Appellant Arguments

According to appellant, claim 20 requires that the sintering-inhibitor region comprises a first element is selected from the Group 2 or 3 of the periodic table and a second element from Group 5 of the periodic table. Appellant then goes on to restate the "can be" arguments as discussed with regard to this feature in claim 1 (see 2.A) Claims 1-5 above). According to appellant, claim 20 further requires that the atomic ratio of the amount of the first element to the amount of the second element is at least 1:3. Appellant then goes on to restate the arguments against the use of routine experimentation as discussed with regard to this feature in claim 1 (see 2.A) Claims 1-5 above).

The Examiner's Response

The Examiner has reviewed these arguments, however, the rejection is maintained. As appellant's arguments are restatements of the arguments given with regard to claim 1, the Examiner maintains the rejection for the reasons given in ***The Examiner's Response*** as to claims 1-5 above (see 2.A) Claims 1-5 above).

Ground 3: The rejection of claims 1-12 and 14-20 under 35 USC 103 as unpatentable over Subramanian US Patent 6,667,064

3.A) Claims 1-5

Appellant Arguments

Appellant argues that claim 1 requires a stabilization composition comprising a first element selected from Group 2 or 3 of the periodic table and a second element selected from Group 5 of the periodic table. Appellant argues that Subramanian does not provide this teaching, merely that the Examiner has provided a new standard of obviousness, "can be", which provides that a hindsight reconstruction of the of a method consistent with the quoted claim limitation "can be" created by a patent examiner with access to the pending application. Appellant argues that the correct standard is that the prior art must teach the limitations of the claims. Appellant argues that Subramanian never teaches the claimed selection of a first element selected from Group 2 or 3 of the periodic table and a second element selected from Group 5 of the periodic table, rather merely provides a disclosure of a number of elements that are in Groups 2, 3 and 5, but no disclosure or teaching of using combinations of specific elements, one from Group 2 or 3 and the other from Group 5 as claimed. Appellant argues that the explanation of the rejection asserts that it would be obvious from Subramanian to select elements in particular combinations to meet the present claim formulations, but in fact there is no teaching that a first element must be Group 2 or Group 3 and a second element must be Group 5. According to the proposed "can be" standard, the first element can be of various Groups as can the second element, but none of these combinations are taught by the reference. With the advantage of hindsight using the present disclosure, the patent examiner "can" always make the right decisions about which elements "can be" selected and how they "can be" ordered.

Appellant argues that claim 1 further requires that the atomic ratio of the amount of the first element to the amount of the second element is at least 1:3. Appellant argues that before routine experimentation can be used to optimize a particular parameter, the parameter must first be recognized as a result-effective variable. Here, appellant argues, there is no teaching that the first element must be a Group 2 or 3 element and second element must be a Group 5 element. Under the examiner's incorrect "can be" standard, other combinations are equally good. As well, there is no recognition in the reference that the ratio of the first to second elements has any significance. Third, there is no indication in Subramanian that if there is an atomic excess of the Group 5 second element, sintering is promoted, the opposite of the desirable sintering retardation that is achieved in the present approach. Fourth, there is no teaching that the recited ratio, 1:3, would yield any advantageous results.

The Examiner's Response

The Examiner has reviewed appellant's arguments, however, the rejection is maintained. As to the selection from the given list of elements of Subramanian to produce the claimed selection of a first element from Group 2 or 3 of the periodic table and a second element from Group 5 of the periodic table, it is the Examiner's position that this is provided by Subramanian at column 5, lines 40-50, column 5, line 60 through column 6, line 10 and claim 8, which teach to provide an stabilization material, which will be infiltrated, the stabilization material including mixtures of oxides of two different elements, where the elements can include lanthanum, neodymium, yttrium,

cerium, niobium and tantalum. As a result, the specific list of materials taught by Subramanian to be used is the any two of the listed materials mixed together. Since lanthanum, cerium, and neodymium are from Group 2/3 of the periodic table and niobium and tantalum are from Group 5 of the periodic table, the use of mixtures of a first element from Group 2/3 of the periodic table and a second element of Group 5 of the periodic table are clearly provided. Subramanian, of course, provides for other combinations that are outside of the scope of appellant's claims, thus the Examiner has noted that Subramanian teaches that the first element "can be" from Group 2 or 3 and the second element "can be" from Group 5. However, the Examiner is not attempting to create a new legal standard. As discussed in MPEP 2131.02, a reference that clearly names the claimed species anticipates the claim no matter how many other species are named in a reference. Thus, a reference does not have to specifically describe only the claimed invention of appellant, using the words and groupings of appellant, but rather the reference merely has to provide a teaching that would provide one of the claimed possibilities of appellant. For example, if a claim of an application has a Markush group with 10 possible elements to be selected from, a reference that discloses a single one of those elements will read on the claim and can be used to reject it. Here, the Examiner is not saying that it would have been obvious to select elements to meet the present claim, but rather that the listing of elements and mixtures provides combinations of elements that specifically meet appellant's listed material requirements. The fact that appellant has described the listing of the materials in a different way than the reference does not

prevent the resulting materials provided from overlapping that of appellant. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). Here, the information as to elements that can be used is provided in Subramanian.

As to the atomic ratio of the first element to the second element, the Examiner has taken the position that Subramanian teaches to select one or more from the listed inhibitor materials, and one of ordinary skill in the art would provide routine experimentation to optimize the amounts of each material to be used such that desirable inhibition is provided. The particular parameter of the amount of each inhibitor materials to be used when selected from the listed inhibitor materials would clearly be recognized as a result effective variable such that the determination of optimum or workable ranges of the variable would be characterized as routine experimentation, because the material is specifically described as selected to have a low tendency to sinter, which provides the claimed sintering inhibition, and one would need to know how much to use to provide desired inhibiting. As discussed in Subramanian at column 7, lines 10-20, materials are advantageously selected based on their phase

stability and possible reaction products, which are designed to have a low tendency to sinter. Since the amounts of each element used would be optimized, the resulting ratio of the elements would occur as claimed. Appellant has made no showing of criticality or unexpected benefits as to this range. Thus, while Subramanian may not show any discussion of benefits of the ratio range as claimed, the ratio range would appear to flow naturally from the optimization of the amounts of the individual elements. Also, while Subramanian does not specifically describe problems if an atomic excess of Group 5 second element is used, Subramanian specifically desires low sintering tendencies and selection of amounts that would provide such sintering inhibition would be part of the routine experimentation process for optimizing amounts of the elements used. Finally, while Subramanian does not teach the specific claimed ratio, ratios within the claimed range would flow naturally from the optimization of the amounts of the individual elements.

3.B) Claim 6

Appellant Arguments

According to appellant, claim 6 incorporates the limitations of claim 1 and further requires that the first element is selected from the group consisting of lanthanum, neodymium, and cerium. According to appellant, Subramanian has no such teaching, rather using the Examiner's "can be" standard, it is equally true that the second element can be selected from the group consisting of lanthanum, neodymium,

and cerium; or that the first element can be selected from the group consisting of tantalum and niobium; or any other group of associated elements.

The Examiner's Response

The Examiner has reviewed these arguments, however, the rejection is maintained. As to the limitations of claim 1, the Examiner maintains the rejection of claim 1 for the reasons given in ***The Examiner's Response*** as to claims 1-5 (3.A) Claims 1-5) above. As to the specific selection of the first element as claimed in claim 6, the arguments as discussed in regard to claim 1 as to the "can be" standard also apply in this case. As to the selection from the given list of elements of Subramanian to produce the claimed selection of a second element from tantalum or niobium, it is the Examiner's position that this is provided by Subramanian at column 5, lines 40-50, column 5, line 60 through column 6, line 10 and claim 8, which teach to provide an stabilization material, which will be infiltrated, including mixtures of oxides of two different elements, where the elements can include lanthanum, neodymium, yttrium, cerium, niobium and tantalum. As a result, the specific list of materials taught by Subramanian to be used is the any two of the listed materials mixed together. Since lanthanum, cerium and neodymium are listed, the use of mixtures with a first element from the group of lanthanum, neodymium and cerium is provided. Subramanian, of course, provides for other combinations that are outside of the scope of appellant's claims, thus the Examiner has noted that Subramanian teaches that the first element "can be" from lanthanum, cerium or neodymium. However, the Examiner is not

attempting to create a new legal standard. As discussed in MPEP 2131.02, a reference that clearly names the claimed species anticipates the claim no matter how many other species are named in a reference. Thus, a reference does not have to specifically describe only the claimed invention of appellant, using the words and groupings of appellant, but rather the reference merely has to provide a teaching that would provide one of the claimed possibilities of appellant. For example, if a claim of an application has a Markush group with 10 possible elements to be selected from, a reference that discloses a single one of those elements will read on the claim and can be used to reject it. Here, the Examiner is not saying that it would have been obvious to select elements to meet the present claim, but rather that the listing of elements and mixtures provides combinations of elements that specifically meet appellant's listed material requirements. The fact that appellant has described the listing of the materials in a different way than the reference does not prevent the resulting materials provided from overlapping that of appellant.

3.C) Claim 7

Appellant Arguments

According to appellant, claim 7 incorporates the limitations of claim 1 and further requires that the second element is selected from the group consisting of tantalum and niobium. According to appellant, Subramanian has no such teaching, rather using the Examiner's "can be" standard, it is equally true that the second element can be selected from the group consisting of lanthanum, neodymium, and cerium; or

that the first element can be selected from the group consisting of tantalum and niobium; or any other group of associated elements.

The Examiner's Response

The Examiner has reviewed these arguments, however, the rejection is maintained. As to the limitations of claim 1, the Examiner maintains the rejection of claim 1 for the reasons given in ***The Examiner's Response*** as to claims 1-5 (3.A) Claims 1-5) above. As to the specific selection of the first element as claimed in claim 7, the arguments as discussed in regard to claim 1 as to the "can be" standard also apply in this case. As to the selection from the given list of elements of Subramanian to produce the claimed selection of a second element from tantalum or niobium, it is the Examiner's position that this is provided by Subramanian at column 5, lines 40-50, column 5, line 60 through column 6, line 10 and claim 8, which teach to provide an stabilization material, which will be infiltrated, including mixtures of oxides of two different elements, where the elements can include lanthanum, neodymium, yttrium, cerium, niobium and tantalum. As a result, the specific list of materials taught by Subramanian to be used is the any two of the listed materials mixed together. Since tantalum and niobium are listed, the use of mixtures with a second element from the group of tantalum and niobium is provided. Subramanian, of course, provides for other combinations that are outside of the scope of appellant's claims, thus the Examiner has noted that Subramanian teaches that the second element "can be" from tantalum or niobium. However, the Examiner is not attempting to create a new legal

standard. As discussed in MPEP 2131.02, a reference that clearly names the claimed species anticipates the claim no matter how many other species are named in a reference. Thus, a reference does not have to specifically describe only the claimed invention of appellant, using the words and groupings of appellant, but rather the reference merely has to provide a teaching that would provide one of the claimed possibilities of appellant. For example, if a claim of an application has a Markush group with 10 possible elements to be selected from, a reference that discloses a single one of those elements will read on the claim and can be used to reject it. Here, the Examiner is not saying that it would have been obvious to select elements to meet the present claim, but rather that the listing of elements and mixtures provides combinations of elements that specifically meet appellant's listed material requirements. The fact that appellant has described the listing of the materials in a different way than the reference does not prevent the resulting materials provided from overlapping that of appellant.

3.D) Claim 8

Appellant Arguments

According to appellant, claim 8 incorporates the limitations of claim 1 and further requires that the stabilization composition is selected from the group consisting of lanthanum and tantalum, neodymium and tantalum, lanthanum and niobium, neodymium and niobium, and cerium and tantalum. According to appellant, Subramanian has no such teaching, rather using the Examiner's "can be" standard, it is

equally true that the elemental pairings can be lanthanum and niobium, barium and strontium, barium and tantalum, etc.

The Examiner's Response

The Examiner has reviewed these arguments, however, the rejection is maintained. As to the limitations of claim 1, the Examiner maintains the rejection of claim 1 for the reasons given in ***The Examiner's Response*** as to claims 1-5 (3.A) Claims 1-5) above. As to the specific combination of elements as claimed in claim 8, the arguments as discussed in regard to claim 1 as to the "can be" standard also apply in this case. As to the selection from the given list of elements of Subramanian to produce the claimed selection of a second element from tantalum or niobium, it is the Examiner's position that this is provided by Subramanian at column 5, lines 40-50, column 5, line 60 through column 6, line 10 and claim 8, which teach to provide an stabilization material, which will be infiltrated, including mixtures of oxides of two different elements, where the elements can include lanthanum, neodymium, yttrium, cerium, niobium and tantalum. As a result, the specific list of materials taught by Subramanian to be used is the any two of the listed materials mixed together. Since lanthanum, neodymium, tantalum and niobium are listed, the use of mixtures of a combination of these elements is provided. Subramanian, of course, provides for other combinations that are outside of the scope of appellant's claims, thus the Examiner has noted that Subramanian teaches that the combinations of element "can be" as claimed. However, the Examiner is not attempting to create a new legal standard. As discussed

in MPEP 2131.02, a reference that clearly names the claimed species anticipates the claim no matter how many other species are named in a reference. Thus, a reference does not have to specifically describe only the claimed invention of appellant, using the words and groupings of appellant, but rather the reference merely has to provide a teaching that would provide one of the claimed possibilities of appellant. For example, if a claim of an application has a Markush group with 10 possible elements to be selected from, a reference that discloses a single one of those elements will read on the claim and can be used to reject it. Here, the Examiner is not saying that it would have been obvious to select elements to meet the present claim, but rather that the listing of elements and mixtures provides combinations of elements that specifically meet appellant's listed material requirements. The fact that appellant has described the listing of the materials in a different way than the reference does not prevent the resulting materials provided from overlapping that of appellant.

2.E) Claims 9 and 10

Appellant Arguments

According to appellant, claims 9 and 10 incorporates the limitations of claim 1 and further requires co-depositing the first element and the second element. According to appellant, the explanation of the rejection references column 5, lines 40-50 of Subramanian as teaching this limitation, but while this speaks of supplying the elements in a liquid form, it does not specifically teach that multiple elements may be supplied in a single liquid.

The Examiner's Response

The Examiner has reviewed these arguments, however, the rejection is maintained. As to the limitations of claim 1, the Examiner maintains the rejection of claim 1 for the reasons given in ***The Examiner's Response*** as to claims 1-5 (3.A) Claims 1-5) above. As to the suggested co-depositing of first and second elements, Subramanian teaches that the overlay layer is deposited as a precursor coating on top of the underlying base layer via a process that allows for topside deposition and infiltration, including sol-gel processes. See column 5, lines 40-50. Since the precursor coating can be a mixture of two oxides (column 5, lines 60-68), at the very least, it would have been obvious that the mixture would have been co-deposited by the sol-gel process as the layer is described as a single layer that can be a mixture of materials, which would advantageously have been deposited by co-depositing so as to provide the mixture.

3.F) Claim 11

Appellant Arguments

According to appellant, claim 11 incorporates the limitations of claim 1, and further requires that the stabilization compound is deposited such that the atomic ratio of the amount of the first element to the amount of the second element is at least 1:1. According to appellant, Subramanian has no such teaching. Appellant references the discussion of the "1:3" limitation in relation to claim 1. Appellant argues that there is no teaching in Subramanian that an atomic ratio of 1:1 has any particular significance.

The Examiner's Response

The Examiner has reviewed these arguments, however, the rejection is maintained. As to the limitations of claim 1, the Examiner maintains the rejection of claim 1 for the reasons given in ***The Examiner's Response*** as to claims 1-5 (3.A) Claims 1-5) above. As discussed with regard to claim 1, as to the atomic ratio of the first element to the second element, the Examiner has taken the position that Subramanian teaches to select one or more from the listed inhibitor materials, and one of ordinary skill in the art would provide routine experimentation to optimize the amounts of each material to be used such that desirable inhibition is provided. The particular parameter of the amount of each inhibitor materials to be used when selected from the listed inhibitor materials would clearly be recognized as a result effective variable such that the determination of optimum or workable ranges of the variable would be characterized as routine experimentation, because the material is specifically described as selected to have a low tendency to sinter, which provides the claimed sintering inhibition, and one would need to know how much to use to provide desired inhibiting. As discussed in Subramanian at column 7, lines 10-20, materials are advantageously selected based on their phase stability and possible reaction products, which are designed to have a low tendency to sinter. Since the amounts of each element used would be optimized, the resulting ratio of the elements would occur as claimed. Appellant has made no showing of criticality or unexpected benefits as to this range of at least 1:1. Thus, while Subramanian may not show any discussion of benefits of the

ratio range as claimed, the ratio range would appear to flow naturally from the optimization of the amounts of the individual elements.

3.G) Claims 12, 14

Appellant Arguments

According to appellant, claim 12 requires that the stabilization composition comprises a first element is selected from the Group 2 or 3 of the periodic table and a second element from Group 5 of the periodic table. Appellant then goes on to restate the "can be" arguments as discussed with regard to this feature in claim 1 (see 3.A) Claims 1-5 above). According to appellant, claim 12 further requires that the atomic ratio of the amount of the first element to the amount of the second element is at least 1:3. Appellant then goes on to restate the arguments against the use of routine experimentation as discussed with regard to this feature in claim 1 (see 3.A) Claims 1-5 above).

The Examiner's Response

The Examiner has reviewed these arguments, however, the rejection is maintained. As appellant's arguments are restatements of the arguments given with regard to claim 1, the Examiner maintains the rejection for the reasons given in *The Examiner's Response* as to claims 1-5 above (see 3.A) Claims 1-5 above).

3.H) Claim 15

Appellant Arguments

According to appellant, claim 15 incorporates the limitations of claim 12 and further requires that the first element is selected from the group consisting of lanthanum, neodymium, and cerium. According to appellant, who restates the arguments given as to claim 6 (see 3.B) Claim 6 above), Subramanian has no such teaching, rather using the Examiner's "can be" standard, it is equally true that the second element can be selected from the group consisting of lanthanum, neodymium, and cerium; or that the first element can be selected from the group consisting of tantalum and niobium; or any other group of associated elements.

The Examiner's Response

The Examiner has reviewed these arguments, however, the rejection is maintained. As to the limitations of claim 12, the Examiner maintains the rejection of claim 12 for the reasons given in ***The Examiner's Response*** as to claims 12, 14 (3.G) Claims 12, 14) above. As appellant's further arguments are restatements of the arguments given with regard to claim 6, the Examiner maintains the rejection for the reasons given in ***The Examiner's Response*** as to claim 6 above (see 3.B) Claim 6 above).

3.I) Claim 16

Appellant Arguments

According to appellant, claim 16 incorporates the limitations of claim 12 and further requires that the second element is selected from the group consisting of tantalum and niobium. According to appellant, who restates the arguments given as to claim 7 (see 3.C) Claim 7 above), Subramanian has no such teaching, rather using the

Examiner's "can be" standard, it is equally true that the second element can be selected from the group consisting of lanthanum, neodymium, and cerium; or that the first element can be selected from the group consisting of tantalum and niobium; or any other group of associated elements.

The Examiner's Response

The Examiner has reviewed these arguments, however, the rejection is maintained. As to the limitations of claim 12, the Examiner maintains the rejection of claim 12 for the reasons given in ***The Examiner's Response*** as to claims 12, 14 (3.G) Claims 12, 14) above. As appellant's further arguments are restatements of the arguments given with regard to claim 7, the Examiner maintains the rejection for the reasons given in ***The Examiner's Response*** as to claim 7 above (see 3.C) Claim 7 above).

3.J) Claim 17

Appellant Arguments

According to appellant, claim 17 incorporates the limitations of claim 12 and further requires that the stabilization composition is selected from the group consisting of lanthanum and tantalum, neodymium and tantalum, lanthanum and niobium, neodymium and niobium, and cerium and tantalum. According to appellant, who restates the arguments given as to claim 8 (see 3.D) Claim 8 above), Subramanian has no such teaching, rather using the Examiner's "can be" standard, it is equally true that the elemental pairings can be lanthanum and niobium, barium and strontium, barium and tantalum, etc.

The Examiner's Response

The Examiner has reviewed these arguments, however, the rejection is maintained. As to the limitations of claim 12, the Examiner maintains the rejection of claim 12 for the reasons given in ***The Examiner's Response*** as to claims 12,14 (3.G) Claims 12, 14) above. As appellant's further arguments are restatements of the arguments given with regard to claim 8, the Examiner maintains the rejection for the reasons given in ***The Examiner's Response*** as to claim 8 above (see 3.D) Claim 8 above).

3.K) Claim 18

Appellant Arguments

According to appellant, claim 18 incorporates the limitations of claim 12 and further requires co-depositing the first element and the second element. According to appellant, who restates the arguments given as to claims 9 and 10 (see 3.E) Claims 9 and 10 above), the explanation of the rejection references column 5, lines 42-48 of Subramanian as teaching this limitation, but while this paragraph speaks of supplying the elements in a liquid form, it does not specifically teach that multiple elements may be supplied in a single liquid.

The Examiner's Response

The Examiner has reviewed these arguments, however, the rejection is maintained. As to the limitations of claim 12, the Examiner maintains the rejection of claim 12 for the reasons given in ***The Examiner's Response*** as to claims 12, 14 (3.G) Claims 12, 14)above. As appellant's further arguments are restatements of the

arguments given with regard to claims 9 and 10, the Examiner maintains the rejection for the reasons given in ***The Examiner's Response*** as to claims 9 and 10 above (see 3.E) Claims 9 and 10 above).

3.L) Claim 19

Appellant Arguments

According to appellant, claim 19 incorporates the limitations of claim 12, and further requires that the stabilization compound is deposited such that the atomic ratio of the amount of the first element to the amount of the second element is at least 1:1. According to appellant, who restates the arguments given as to claim 11 (see 3.F) Claim 11 above) Subramanian has no such teaching. Appellant references the discussion of the "1:3" limitation in relation to claim 1. Appellant argues that there is no teaching in Ackerman that an atomic ratio of 1:1 has any particular significance.

The Examiner's Response

The Examiner has reviewed these arguments, however, the rejection is maintained. As to the limitations of claim 12, the Examiner maintains the rejection of claim 12 for the reasons given in ***The Examiner's Response*** as to claims 12, 14 (3.G) Claims 12, 14) above. As appellant's further arguments are restatements of the arguments given with regard to claim 11, the Examiner maintains the rejection for the reasons given in ***The Examiner's Response*** as to claim 11 above (see 3.F) Claim 11 above).

3.M) Claim 20

Appellant Arguments

According to appellant, claim 20 requires that the sintering-inhibitor region comprises a first element selected from the Group 2 or 3 of the periodic table and a second element from Group 5 of the periodic table. Appellant then goes on to restate the "can be" arguments as discussed with regard to this feature in claim 1 (see 3.A) Claims 1-5 above). According to appellant, claim 20 further requires that the atomic ratio of the amount of the first element to the amount of the second element is at least 1:3. Appellant then goes on to restate the arguments against the use of routine experimentation as discussed with regard to this feature in claim 1 (see 3.A) Claims 1-5 above).

The Examiner's Response

The Examiner has reviewed these arguments, however, the rejection is maintained. As appellant's arguments are restatements of the arguments given with regard to claim 1, the Examiner maintains the rejection for the reasons given in ***The Examiner's Response*** as to claims 1-5 above (see 3.A) Claims 1-5 above).

Ground 4. The rejection of claim 13 under 35 USC 103 over Subramanian in view of Taylor US Patent 5,520,516

Appellant Arguments

Appellant argues that claim 13 depends from claim 12 and incorporates its limitations. Appellant cites case law as to the requirements for obviousness and argues

that in this case, there is set forth no objective basis for combining the teachings of the references. In the present case, Subramanian teaches that its coating is used with a nickel or cobalt base superalloy, while Taylor teaches a coating for a titanium alloy or a nickel alloy. According to appellant, these are two different classes of materials, and there is no teaching in Taylor of using its approach on superalloys.

The Examiner's Response.

The Examiner has reviewed these arguments, however, the rejection is maintained. As to the limitations of claim 12, the Examiner maintains the rejection of claim 12 for the reasons given in ***The Examiner's Response*** as to claims 12, 14 (3.G) Claims 12, 14) above. As to the argument as to the combination of Subramanian and Taylor not being suggested because Subramanian teaches that its coating is used with a nickel or cobalt base superalloy, while Taylor teaches a coating for a titanium alloy or a nickel alloy, the Examiner notes that Subramanian is directed to a thermal barrier coating system used for components of a combustion turbine engine including turbine blades where a zirconia layer can be applied. See column 1, lines 10-15, column 3, lines 25-50 and column 4, lines 50-60. Moreover, Subramanian specifically teaches that while it is directed to a superalloy substrate material, the TBC (thermal barrier coating) system "can be more generally used with any metal or ceramic based substrate or layer where thermal protection is required or helpful" (column 3, lines 55-60). Since Taylor is also directed to a zirconia based coating for turbine blades, it is clear that the titanium or nickel alloy substrate of Taylor would also be a substrate as described by

Subramanian where thermal protection is required or helpful. As a result, the fact that Taylor's nickel alloy substrate is not described as a superalloy would not prevent a combination with Subramanian, as Subramanian is not limited to superalloy substrates.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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